

# ZORILLODONTOPS, A NEW SCALOPOSAURID FROM THE KAROO

By  
M. A. CLUVER  
*South African Museum, Cape Town*

(With 2 figures)

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## INTRODUCTION

The South African Museum has recently acquired the major part of the fully articulated skeleton of a small therocephalian reptile (S.A.M. No. K 1392), collected by the late Mr. J. J. Pansegrouw at Edenville in the Orange Free State, from Middle Beaufort beds, most probably those of the *Lystrosaurus* zone. Preparation has revealed the entire right side of the skull and most of the right shoulder girdle and limb. Also most of the vertebral column and parts of the pelvic girdle and right hind-limb have been exposed. The specimen is embedded in a soft, green mudstone matrix.

## DESCRIPTION OF THE MATERIAL

The skull has suffered some lateral compression, but it nevertheless seems that in its natural state it was relatively deep and narrow. From the dorsal, supraoccipital border of the foramen magnum to the tip of the premaxilla it measures 44 mm, making it one of the smallest therocephalians yet recovered from the Karoo. The short temporal fossa and relatively large orbit both measure 10 mm in length. The preorbital length is 19 mm, and is thus a little less than half of the total skull length.

Lateral compression appears to have resulted in an artificial median crest above the orbit and temporal fossa. In figure 2 allowance has been made for this and the dorsal midline has been drawn slightly lower than in the actual specimen. It does not, however, seem likely that a flat, intertemporal plate (as in *Scaloposaurus*) was ever present. One side of the intertemporal region has been damaged, but there are no indications of a pineal foramen in the rest of the region. The parietal separates the squamosal from the postorbital,

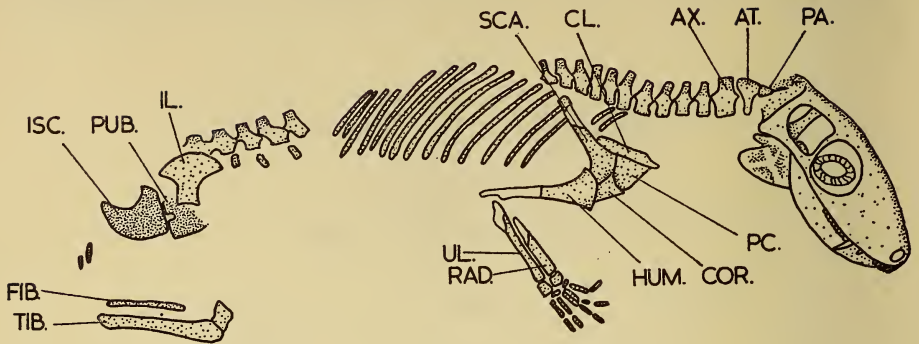


FIG. 1. *Zorillodontops gracilis*, gen. et sp. nov. (S.A.M. No. K1392). Lateral view of preserved portions of the skeleton  $\times \frac{5}{8}$ . The unshaded areas represent bone impressions in the matrix. AT—atlas. AX—axis. CL—clavicle. COR—coracoid. FIB—fibula. HUM—humerus. IL—ilium. ISC—ischium. PA—proatlas. PC—procoracoid. PUB—pubis. RAD—radius. SCA—scapula. TIB—tibia. UL—ulna.

which forms only a short part of the dorsal border of the temporal fossa. The squamosal descends fairly far ventrally towards the quadrate. A triangular postfrontal lies wedged between the postorbital and the frontal. The postorbital bar is complete but slender.

The prefrontal is small and does not separate the nasal from the lacrimal. This condition has been found in *Scaloporphinus angulorugatus* (Boonstra, 1953). At the anterior extremity of the snout the sutures between the premaxilla, septomaxilla and nasal are not clear.

The premaxilla carries six incisors, the first two being indistinct and the last one very small. The premaxillary alveolar border meets the maxillary alveolar border smoothly, and there is no premaxillary 'step'. There are two canines, the first one small and separated by a diastema from the second, large canine. There is a clear diastema between the last incisor and the anterior canine. Eight small postcanine teeth follow closely on the canine. The postcanines are shorter and broader than the incisors and there appear to be minute anterior and posterior cusps on some of them. Unfortunately, the posterior three teeth have been badly damaged and show no details.

The occiput has been laterally compressed and displaced so that in lateral view the supraoccipital, exoccipital and opisthotic are visible. The tabular lies above the post-temporal fenestra, closely apposed to the squamosal. Beneath the opisthotic the stapes is visible, abutting against the inner surface of the quadrate.

The epipterygoid is a flat sheet of bone, expanded ventrally but not dorsally, and is not hour-glass shaped.

A complete ring of approximately 18 extremely delicate scleral plates is present within the orbit, giving an indication of the size of the eyeball. In the type specimen of *Scaloporphinus angulorugatus* scleral plates are also visible.

The lower jaw is drawn up tightly inside the maxilla, and no mandibular teeth could be exposed. The dentary is slender and smoothly curved and the coronoid process projects into the temporal fossa. The large angular wing projects below the level of the dentary and bears a system of prominent radiating ridges. The surangular and articular are also partly visible, but show few details.

The small size of the new specimen suggests the possibility of its being an immature individual. However, the dermal bones of the skull appear to be tightly knit and the scleral plates fully ossified. Furthermore, the posterior canine is fully developed and relatively powerful.

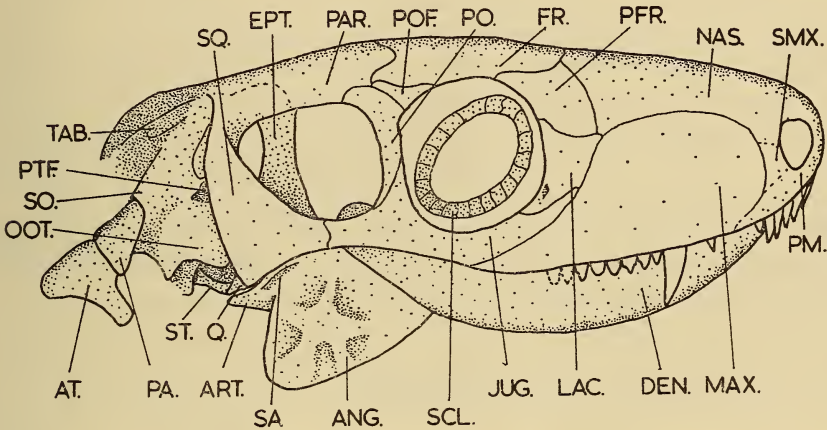


FIG. 2. *Zorillodontops gracilis*, gen. et sp. nov. (S.A.M. No. K1392)  $\times 2$ . Lateral view of skull with occipital distortion uncorrected.

ANG—angular. ART—articular. AT—atlas. DEN—dentary. EPT—epipterygoid. FR—frontal. JUG—jugal. LAC—lacrimal. MAX—maxilla. NAS—nasal. OOT—opisthotic. PA—proatlas. PAR—parietal. PFR—prefrontal. PM—premaxilla. PO—postorbital. POF—postfrontal. PTF—post-temporal fenestra. Q—quadrate. SA—surangular. SCL—scleral plates. SMX—septomaxilla. SO—supraoccipital. SQ—squamosal. ST—stapes. TAB—tabular.

A fairly broad and robust proatlas is present on each side between the atlas and the side of the foramen magnum. The atlas shows few details, but the axis bears its characteristic enlarged neural spine. From the eighth vertebra back the spines are decreased in height and become posteriorly slanted. Beyond this there is no sudden transition between the cervical and thoracic portions of the vertebral column. Little can be seen of the column posterior to the fifth or sixth thoracic vertebra. Four 'lumbar' vertebrae, relatively more robust than the thoracic vertebrae, are preserved.

Twenty ribs of the right side can be made out, the first two of which are short and meet the sixth and seventh vertebrae. Anterior to the ilium there are three short, stout 'lumbar' ribs.

Most of the right side of the pectoral girdle has been preserved. The scapula appears to have been slender dorsally but it broadens ventrally to

meet the large procoracoid and coracoid (the latter slightly displaced). The ventral part of the clavicle lies up against the anterior edge of the scapula and procoracoid. The proximal portion of the right humerus is preserved in articulation with the slightly distorted glenoid cavity. This portion is only moderately expanded. Distally, the humerus is indicated as an impression, but it is possible to estimate the length as 25 mm. Radius and ulna are present, proximally indicated as bone impressions. The length of the ulna is approximately 19 mm.

The manus was exposed but is incomplete. A radiale and ulnare are clearly present, as are what I take to be two centrals. There is an indication of a fourth or fifth distal, but no sign of the first three distals. All five metacarpals are present, followed by five elongated proximal phalanges similar to *Erciolacerta* (Watson, 1931). The second and third digits have a further anterior, similarly elongated phalanx each, but no other phalanges or terminals could be found.

Posteriorly the expanded blade-like right ilium is preserved, but the right pubis and ischium have been lost. Preparation, however, exposed the inner surfaces of the left ischium and pubis, indicating their general outline. The obturator foramen can be made out as a notch in the posterior edge of the pubis, closed off posteriorly by the ischium. There is a fairly strong tibia and a thin, reduced fibula alongside it. Of the hind-foot, only a few small, scattered bones and what appear to be two phalanges are left.

#### DISCUSSION

In the following discussion the division of the Therocephalia used by Houghton & Brink (1954) has been followed.

Owing to its small size, slender, smoothly curved dentary, single large canine and small anterior canine, short temporal fossa and lack of a raised temporal crest, our skull does not correspond to any members of the Pristerognathidae, Lycosuchidae or Alopecodontidae. It is also manifestly distant from the specialized Whatsiidae, Lycideopsidae and Euchambersidae.

Among the Ictidosuchidae, both *Ictidosuchus* and *Ictidodraco* have one canine. Broom (1920, 1932) found two anterior canines in *Ictidosuchooides* but Boonstra (1934) could find only two unerupted precanines. This family is, moreover, characterized by a long temporal fossa and a raised intertemporal crest.

The Akidnognathidae have a small anterior canine tooth and a post-frontal, but the skull is much larger. In *Akidnognathus* the first canine follows immediately on the powerful incisors, whereas in our specimen a considerable diastema separates the incisors and canines. *Ictidosaurus* resembles our specimen more in this respect, but is from the *Tapinocephalus* zone and is much larger. There is, moreover, a marked premaxillary 'step', which occurs also in *Scylacosaurus*. *Trochosuchus* has only four postcanine teeth.

The new specimen must therefore fall under the Scaloposauridae.

It should be noted that Romer (1956, 1966), divides the Scaloposauridae of Houghton & Brink (1954) into several new families which, together with the Lycideopsidae and Ictidosuchidae, he places in another infraorder, the Bauriamorpha. According to Houghton & Brink (1954), the Scaloposauridae can be defined as follows:

'Skull small. Snout usually long. Intertemporal bar fairly broad. Postorbital bar either complete or incomplete, but always feeble. Secondary palate in process of development. Teeth numerous and pointed, with one or two small canines in front of the main canine. Pineal foramen present or absent' (p. 141).

The presence of a postfrontal is uncommon in this family, but has been found in *Ictidostoma hemburyi* (Broom, 1932), which is from the *Endothiodon* zone. For the rest, the small size, slender dentary, weak postorbital, small precanine tooth, short temporal fossa (and possible absence of a pineal foramen) are characteristics found within the scaloposaurids.

*Silpholestes jackae* (Broom, 1948) from the *Cistecephalus* zone is only slightly larger than the new specimen, and has the same general proportions. There is an enlarged canine and a small anterior canine, but there are thirteen postcanines (as against eight postcanines in our specimen) and the first canine is not separated from the incisors and large canine by diastemas. The postorbital is figured as being complete (although Broom was uncertain of this). Further points of difference are the large prefrontal and the apparent absence of a postfrontal in *Silpholestes*.

Among the other scaloposaurids *Scaloporhinus* (Boonstra, 1953) has a similar large ornamented angular and short prefrontal, while *Ictidostoma* (Broom, 1912, 1932) resembles our specimen in its dentition and the presence of a postfrontal. *Eriaciolacerta* (Watson, 1931) is also from the *Lystrosaurus* zone.

On the basis of these similarities and differences, it seems justified to regard our specimen as representative of a separate genus in the family Scaloposauridae, and I propose for it the name *Zorillodontops gracilis*, gen. et sp. nov. *Zorillodontops* is probably related to *Silpholestes* and can be taxonomically defined as follows:

Class	Reptilia
Subclass	Synapsida
Order	Therapsida
Infraorder	Therocephalia
Family	Scaloposauridae

#### ZORILLODONTOPS n.gen.

*Diagnosis*: Skull small, lacrimal meets nasal, postfrontal present, postorbital bar complete but slender, 6 incisors, 2 canines of which posterior one is enlarged, 8 postcanines, reflected lamina large with radiating ridges.

*Zorillodontops gracilis* n.sp.

*Holotype*: Skull with major part of postcranial skeleton, S.A.M. No. K1392.

*Horizon and locality*: *Lystrosaurus* zone, Edenville, Orange Free State, South Africa.

*Diagnosis*: As for genus.

If Romer's (1956) classification is followed, *Zorillodontops* would be included in the family Silpholestidae of the infraorder Bauriamorpha.

## ACKNOWLEDGEMENTS

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## SUMMARY

The skull and major part of the skeleton of a small, new *Lystrosaurus* zone therocephalian, *Zorillodontops gracilis*, is described. It is concluded that *Zorillodontops* is a scaloposaurid and is unusual in having a postfrontal. The new genus is in several respects similar to *Silpholestes*, a small scaloposaurid from the *Cistecephalus* zone.

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